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EXAMINER

NGUYEN, HOAN C

ART UNIT

PAPER NUMBER

2871

DATE MAILED: 07/03/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Applicati n N .

09/530,008

Applicant(s)

KANEKO ET AL.

Examiner

HOAN C. NGUYEN

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-5 and 7-14 is/are pending in the application.
- 4a) Of the above claim(s) 6 is/are withdrawn from consideration.
- 5) ☒ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☐ Claim(s) 1, 2, 4, 9-14 is/are rejected.
- 7) ☒ Claim(s) 3, 5, 7 and 8 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

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## DETAILED ACTION

Applicants cancelled claim 6.

### ***Claim Rejections - 35 USC § 112***

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

1. Claims 1-13 and 14 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

In a light of applicant's arguments, claims 1 and 12-13 cites "the direction of the twist angle of molecule orientation of the twisted phase difference board is reverse to the direction (in opposite direction) of the twisted orientation (greater than 180°) of the (STN) liquid crystal molecule of the liquid crystal devices". Thus, the twist angle of the twisted phase difference board is not able to be smaller than the twist angle of the liquid crystal devices by 10° to 40°.

For example, if the twisted angle of the (STN) liquid crystal molecule of the liquid crystal devices is 200°, and the twist angle of the twisted phase difference board is about -230°, the twist angle of the twisted phase difference board should be smaller

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than the twist angle of the liquid crystal devices by  $(200^{\circ} - (-230^{\circ})) = 430^{\circ}$ , which cannot be smaller than the twist angle of the liquid crystal devices by  $10^{\circ}$  to  $40^{\circ}$  (please, see ***Response to Arguments*** below).

Claims 2-11 and 14 are rejected since they depend on the infinite claim.

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

1. Claim 14 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Applicants need to clarify the feature what is "a preferential view angle of the liquid crystal device". Is it simply a view angle? And what special about the a preferential view angle that sets to one direction at 2:30 or 4:30 or 7:30 or 10:30 o'clock? a preferential view angle is viewing at ONLY this angle.

### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

1. Claims 1, 2, 4 and 9-10 are rejected under 35 U.S.C. 102(b) as being anticipated by Shigeki et al. (JP03294821) submitted by applicant in IDS and PCT report.

In regard to claims 1 and 2, Shigeki et al. teach (Figs 1 and 2) a liquid crystal display apparatus comprising

- a first substrate having a first transparent electrode
- a second substrate having a second transparent electrode,
- liquid crystal devices holding a nematic liquid crystal layer which is twist-oriented by an STN-twist angle between the first and second substrates;
- a first polarization board (6) provided for an outside of the first substrate;
- a twisted phase difference board (3) provided for the outside of the second substrate and having liquid crystal polymer layers;
- a second polarization board (2) provided for the outside of the twisted phase difference board;

characterized in that,

- the direction of the twist angle of molecule orientation 14 of the twisted phase difference board (3) is reverse to the direction (in opposite direction) of the twisted orientation 13 of the liquid crystal molecule of the liquid crystal devices,
- the twist angle of the twisted phase difference board about  $200^{\circ}$  with heat treatment for the manufacture (applicant example 3, Table 3). The twist angle of the liquid crystal devices about  $230^{\circ}$ , which is in a range of  $180^{\circ}$ - $270^{\circ}$  according to claim 2. Therefore, the twist angle of the twisted phase difference board is

smaller than the twist angle of the liquid crystal devices by  $30^\circ$ , which is in a range of  $10^\circ$  to  $40^\circ$ .

In regard to claim 4, Shigeki et al. teach (Figs 1 and 2) a liquid crystal display apparatus, wherein

- a retardation  $\Delta n d_1$  obtained by product of a double refractive index  $\Delta n_1$  of the nematic liquid crystal layer and a thickness  $d_1$  of the liquid crystal layer, the retardation  $\Delta n d_1$  is  $0.87\mu\text{m}$ , which lies in the range of 0.7 to  $0.9\mu\text{m}$ ,
- a retardation  $\Delta n d_2$  obtained by product of the double refractive index  $\Delta n_2$  of the liquid crystal polymer layer and the thickness  $d_2$  of the liquid crystal polymer layer, the retardation  $\Delta n d_2$  is  $0.7\mu\text{m}$  (Table 3, application example 6, line 6 col. 4)
- the difference  $\Delta n d_1 - \Delta n d_2 = 0.17$  that lies in the range of 0.1 to  $0.3\mu\text{m}$ .

In regard to claim 9, Shigeki et al. teach (Figs 1 and 2) a liquid crystal display apparatus, wherein the liquid crystal polymer layer of the twisted phase difference board has a temperature-compensating characteristic in a predetermined temperature range shown in Table 3.

In regard to claim 10, Shigeki et al. teach (Figs 1 and 2) a liquid crystal display apparatus, wherein the liquid crystal polymer layer has a temperature-compensating characteristic in which the retardation ( $\Delta n d_2 = 0.7\mu\text{m}$ ) of the liquid crystal polymer layer is

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always smaller than the retardation ( $\Delta n d_2 = 0.87 \mu\text{m}$ ) of the nematic liquid crystal layer in a predetermined temperature range (Table 3, application example 6, line 6 col. 4).

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Shigeki et al. (JP03294821).

It is conventional that a liquid crystal display apparatus is working in condition of room temperature about 25-30 °C, which is lies in the predetermined temperature range of 20-80 °C.

### ***Allowable Subject Matter***

3. Claims 3, 5 and 7-8 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter: The claims 3 and 5 are allowable since there is no prior art teaches a combination of:

- the twist angle of the twisted phase difference board smaller than the twist angle of the liquid crystal devices by  $30^\circ$  in a range of  $10^\circ$  to  $40^\circ$ .
- an angle between the liquid crystal molecule-oriented direction of the alignment film (23a) of the second substrate and the molecule-oriented direction of a lower polymer (32b) of the liquid crystal polymer layer lies in the range of  $80^\circ$  to  $90^\circ$ ;
- an angle between an absorption axis of the first polarization board (1) and the liquid crystal molecule-oriented direction of the alignment film (23b) of the first substrate side lies in the range of  $50^\circ$  to  $60^\circ$ ;
- an angle between the absorption axis of the second polarization board (4) and the molecule oriented direction of an upper polymer (32a) of the liquid crystal polymer lies in the range of  $30^\circ$  to  $40^\circ$ .

Claims 7 and 8 are allowable since they depend on the allowable claims.

2. Claims 12 and 13 would be allowable if rewritten or amended to overcome the rejection(s) under 35 U.S.C. 112, first paragraph, set forth in this Office action. The following is an examiner's statement of reasons for allowance:

- Claim 12 is allowed with the same reasons above for claim 3 and 5.
- Claim 13 is allowed since there is no prior art teaches the combination of the claim subjects from a-e, specially c and d.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably



accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

***Response to Arguments***

Applicant's arguments filed on April 8, 2003 have been fully considered but they are not persuasive.

Applicant's ONLY arguments are follows:

A. Shigeki et al. fail to disclose the twisted angle of the twisted phase difference board about  $200^{\circ}$  and the twisted angle of the liquid crystal device about  $230^{\circ}$ .

Applicant further states "when a compensation board is used having a twisted angle of  $200^{\circ}$ , as shown in Example 3 of Table 3, a STN liquid crystal cell having twisted angle of  $-230^{\circ}$  would be selected to form a liquid crystal device having a good white and black display",

B. Shigeki et al. Refers to a burn-in condition to fabricate a phase compensation board, not a temperature compensating characteristic of a twisted phase difference board.

Examiner's responses to Applicants' ONLY arguments are follows:

A. Claim 1 needs two requirements:

(a) the direction of the twist angle of molecule orientation of the twisted phase difference board is reverse to the direction (in opposite direction) of the twisted orientation of the liquid crystal molecule of the liquid crystal devices,

(b) the twist angle of the twisted phase difference board is smaller than the twist angle of the liquid crystal devices by  $10^{\circ}$  to  $40^{\circ}$ .

Shigeki et al. disclose the direction of the twist angle of molecule orientation of the twisted phase difference board is  $200^{\circ}$ , thus the twist angle of the twisted phase difference board is  $|200^{\circ}| = 200^{\circ}$ ; and the twisted orientation of the liquid crystal molecule of the liquid crystal devices is  $-230^{\circ}$  for the requirement (a), thus the twist angle of the liquid crystal devices is  $|-230^{\circ}| = 230^{\circ}$ .

Examiner takes the twist angle as the absolute value of the twist angle of molecule orientation. If not, the requirement (b) cannot be fulfilled (please see the 112 first paragraph rejection above).

B. Shigeki et al. disclose (Table 3) different heat treatment obtaining different twisted angle and retardation value of the twisted phase difference board; therefore, the liquid crystal polymer layer of the twisted phase difference board has a temperature-compensating characteristic in a predetermined temperature range shown in Table 3.

### ***Conclusion***

**THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not

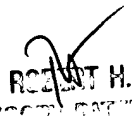
mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to HOAN C. NGUYEN whose telephone number is (703) 306-0472. The examiner can normally be reached on MONDAY-THURSDAY:8:00AM-4:30PM.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0530.

HOAN C. NGUYEN  
Examiner  
Art Unit 2871

chn  
June 18, 2003

  
ROBERT H. KIM  
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